

CLAIMS:

1. A security lock arrangement which includes:
 - a carrier to be mounted on a wing member;
 - at least one latch bolt displaceably arranged relative to the carrier between a
 - 5 retracted, unlocked position and an extended, locked position;
 - an urging means acting on the at least one latch bolt for urging the latch bolt to its extended, locked position;
 - a drive means mounted on the carrier for driving the at least one latch bolt at least into its retracted position against the action of the urging means; and
 - 10 a displacement mechanism interposed between the drive means and the at least one latch bolt, the displacement mechanism comprising a cam member rotatably driven by the drive means, the cam member acting on a follower of the at least one latch bolt, the cam member having a maximum throw when the at least one latch bolt is proximate its retracted position.
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2. The security lock arrangement of claim 1 which comprises at least two latch bolts extending in opposite directions.
3. The security lock arrangement of claim 2 which comprises two pairs of
- 20 orthogonally arranged latch bolts.
4. The security lock arrangement of claim 3 in which the latch bolts are arranged in a cruciform-arrangement on the wing member and, when in their locked positions, project beyond edges of the wing member.
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5. The security lock arrangement of any one of claims 2 to 4 in which each latch bolt has a carrier associated with it, each carrier being in the form of a carrier plate mountable to an operatively inner surface of the wing member.
- 30 6. The security lock arrangement of claim 5 in which at least one carrier plate is arranged in segments to facilitate adjustment of the length of the carrier plate to cater for wing members of different sizes.
7. The security lock arrangement of claim 5 or claim 6 in which each latch bolt is
- 35 mounted on a control arm, an operatively inner end of the control arm being pivotally secured to a rotary element arranged substantially centrally on the carrier plate.

8. The security lock arrangement of claim 7 in which the rotary element carries the follower, the follower being eccentrically arranged on the rotary element so that, when the cam rotates, it drives the rotary element through a predetermined arc to cause the control arms to be drawn inwardly to retract the latch bolts to their unlocked position.

9. The security lock arrangement of claim 7 or claim 8 in which the cam is arranged so that, when the latch bolts are in their retracted position, the follower is at a position of maximum throw of the cam.

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10. The security lock arrangement of claim 8 in which a recessed region is arranged on a surface of the cam following the position of maximum throw so that, as the cam continues to rotate, the follower moves into register with such recessed region.

11. The security lock arrangement of any one of claims 7 to 10 which includes a non-contact, proximity detection unit associated with at least one of the latch bolts for determining when the wing member is in its closed position relative to a surround of the wing member, the proximity detection unit, upon detecting that the wing member is closed, acting on the holding means to cause the holding means to disengage the at least one latch bolt so that the at least one latch bolt moves to its extended, locked position under the action of the urging means.

12. The security lock arrangement of claim 11 in which the control arm for the latch bolt associated with the proximity detection unit is connected to the latch bolt via a positive drive arrangement.

13. The security lock arrangement of claim 11 or claim 12 which includes a holding assembly for holding the at least one latch bolt in its retracted position.

14. The security lock arrangement of claim 13 in which the holding assembly is in the form of a pawl which engages a receiving formation associated with the positive drive arrangement.

15. The security lock arrangement of claim 14 in which the pawl is pivotally mounted on the carrier and is biased into engagement with the receiving formation.

16. The security lock arrangement of claim 14 or claim 15 in which the proximity detection unit comprises a magnetic assembly having a first magnet mounted in a wing member frame and a second magnet displaceably arranged relative to the carrier proximate a free edge of the wing member.
- 5 17. The security lock arrangement of claim 16 in which the second magnet is operatively associated with the pawl to act on the pawl so that, when the second magnet is attracted by the first magnet, when the wing member is in its closed position, the pawl is urged out of engagement with the receiving formation to release the latch bolts
- 10 to enable the latch bolts to extend to be received in their respective striker plates under the action of the urging means.
18. The security lock arrangement of any one of the preceding claims which includes an operating mechanism which acts on the at least one latch bolt to withdraw
- 15 the latch bolt from its locked position to its unlocked position, the operating mechanism comprising, in combination, a handle mountable on one side of the wing member and a key lock mechanism mountable on an opposed side of the wing member, the key lock mechanism including a barrel in register with a rotational axis of the handle, the barrel and the handle being connected by a link, the link including a lost motion component to
- 20 allow the barrel and the handle to operate independently of each other.
19. The security lock arrangement of claim 18 in which the link connecting the handle and the barrel comprises a pair of co-axially aligned spindles interconnected by an axle or pin.
- 25 20. The security lock arrangement of claim 19 in which a first of the spindles is connected to the handle with the second of the spindles being associated with the barrel of the lock, the pin being arranged at facing, inner ends of the spindles.
- 30 21. The security lock arrangement of claim 19 or claim 20 in which the first spindle has a drive member on its inner end with the second spindle having a driven member on its second end on which the drive member acts.
22. The security lock arrangement of any one of claims 19 to 21 in which the lost
- 35 motion link includes a connecting formation at an outer end of the second spindle via which the barrel of the key lock is connected to the second spindle.

23. The security lock arrangement of claim 22 in which the connecting formation comprises a pair of opposed, spaced slot-defining members at an outer end of the second spindle, the slot-defining members having shaped surfaces so that, when the second spindle is rotated under the effect of the handle, the slot-defining members can rotate relative to a component of the key lock without impinging on the component but, when the key lock is used to unlock the security lock arrangement, the component bears against the slot-defining members to cause rotation of the second spindle only.

10 24. A security lock arrangement which includes:
a carrier to be mounted on a wing member;
at least one latch bolt displaceably arranged relative to the carrier between a retracted, unlocked position and an extended, locked position;
an urging means acting on the at least one latch bolt for urging the latch bolt to
15 its extended, locked position;
a displacement mechanism for displacing the at least one latch bolt at least to its retracted, unlocked position against the action of the urging means;
a holding assembly for holding the at least one latch bolt in its retracted position; and
20 a non-contact, proximity detection unit for determining when the wing member is in its closed position relative to a surround of the wing member, the proximity detection unit, upon detecting that the wing member is closed, acting on the holding assembly to cause the holding assembly to disengage the at least one latch bolt so that the at least one latch bolt moves to its extended, locked position under the action of the
25 urging means.

25. The security lock arrangement of claim 24 which comprises at least two latch bolts extending in opposite directions.

30 26. The security lock arrangement of claim 25 which comprises two pairs of orthogonally arranged latch bolts.

27. The security lock arrangement of claim 26 in which the latch bolts are arranged in a cruciform-arrangement on the wing member and, when in their locked positions,
35 project beyond edges of the wing member.

28. The security lock arrangement of any one of claims 25 to 27 in which each latch bolt has a carrier associated with it, each carrier being in the form of a carrier plate mountable to an operatively inner surface of the wing member.
- 5 29. The security lock arrangement of claim 28 in which at least one carrier plate is arranged in segments to facilitate adjustment of the length of the carrier plate to cater for wing members of different sizes.
- 10 30. The security lock arrangement of claim 28 or claim 29 in which each latch bolt is mounted on a control arm, an operatively inner end of the control arm being pivotally secured to a rotary element arranged substantially centrally on the carrier plate.
- 15 31. The security lock arrangement of claim 30 in which the control arm for the latch bolt associated with the proximity detection unit is connected to the latch bolt via a positive drive arrangement.
- 20 32. The security lock arrangement of any one of claims 25 to 31 in which the holding assembly is in the form of a pawl which engages a receiving formation associated with the positive drive arrangement.
33. The security lock arrangement of claim 32 in which the pawl is pivotally mounted on the carrier and is biased into engagement with the receiving formation.
- 25 34. The security lock arrangement of claim 32 or claim 33 in which the proximity detection unit comprises a magnetic assembly having a first magnet mounted in a wing member frame and a second magnet displaceably arranged relative to the carrier proximate a free edge of the wing member.
- 30 35. The security lock arrangement of claim 34 in which the second magnet is operatively associated with the pawl to act on the pawl so that, when the second magnet is attracted by the first magnet, when the wing member is in its closed position, the pawl is urged out of engagement with the receiving formation to release the latch bolts to enable the latch bolts to extend to be received in their respective striker plates under the action of the urging means.

36. The security lock arrangement of any one of claims 24 to 35 which includes an operating mechanism which acts on the at least one latch bolt to withdraw the latch bolt from its locked position to its unlocked position, the operating mechanism comprising, in combination, a handle mountable on one side of the wing member and a key lock
5 mechanism mountable on an opposed side of the wing member, the key lock mechanism including a barrel in register with a rotational axis of the handle, the barrel and the handle being connected by a link, the link including a lost motion component to allow the barrel and the handle to operate independently of each other.
- 10 37. The security lock arrangement of claim 36 in which the link connecting the handle and the barrel comprises a pair of co-axially aligned spindles interconnected by an axle or pin.
38. The security lock arrangement of claim 37 in which a first of the spindles is
15 connected to the handle with the second of the spindles being associated with the barrel of the lock, the pin being arranged at facing, inner ends of the spindles.
39. The security lock arrangement of claim 37 or claim 38 in which the first spindle has a drive member on its inner end with the second spindle having a driven member
20 on its second end on which the drive member acts.
40. The security lock arrangement of any one of claims 37 to 39 in which the lost motion link includes a connecting formation at an outer end of the second spindle via which the barrel of the key lock is connected to the second spindle.
- 25 41. The security lock arrangement of claim 40 in which the connecting formation comprises a pair of opposed, spaced slot-defining members at an outer end of the second spindle, the slot-defining members having shaped surfaces so that, when the second spindle is rotated under the effect of the handle, the slot-defining members can
30 rotate relative to a component of the key lock without impinging on the component but, when the key lock is used to unlock the security lock arrangement, the component bears against the slot-defining members to cause rotation of the second spindle only.
42. A security lock arrangement which includes:
35 a carrier to be mounted on a wing member;

at least one latch bolt displaceably arranged relative to the carrier between a retracted, unlocked position and an extended, locked position;

an urging means acting on the at least one latch bolt for urging the latch bolt to its extended, locked position; and

5 an operating mechanism which acts on the at least one latch bolt to withdraw the latch bolt from its locked position to its unlocked position, the operating mechanism comprising, in combination, a handle mountable on one side of the wing member and a key lock mechanism mountable on an opposed side of the wing member, the key lock mechanism including a barrel in register with a rotational axis of the handle, the barrel
10 and the handle being connected by a link, the link including a lost motion component to allow the barrel and the handle to operate, at least partially, independently of each other.

43. The security lock arrangement of claim 42 which comprises at least two latch
15 bolts extending in opposite directions.

44. The security lock arrangement of claim 43 which comprises two pairs of orthogonally arranged latch bolts.

20 45. The security lock arrangement of claim 44 in which the latch bolts are arranged in a cruciform-arrangement on the wing member and, when in their locked positions, project beyond edges of the wing member.

46. The security lock arrangement of any one of claims 43 to 45 in which each latch
25 bolt has a carrier associated with it, each carrier being in the form of a carrier plate mountable to an operatively inner surface of the wing member.

47. The security lock arrangement of claim 46 in which at least one carrier plate is arranged in segments to facilitate adjustment of the length of the carrier plate to cater
30 for wing members of different sizes.

48. The security lock arrangement of claim 46 or claim 47 in which each latch bolt is mounted on a control arm, an operatively inner end of the control arm being pivotally secured to a rotary element arranged substantially centrally on the carrier plate.

49. The security lock arrangement of any one of claims 42 to 48 in which the link connecting the handle and the barrel comprises a pair of co-axially aligned spindles interconnected by an axle or pin.
- 5 50. The security lock arrangement of claim 51 in which a first of the spindles is connected to the handle with the second of the spindles being associated with the barrel of the lock, the pin being arranged at facing, inner ends of the spindles.
- 10 51. The security lock arrangement of claim 49 or claim 50 in which the first spindle has a drive member on its inner end with the second spindle having a driven member on its second end on which the drive member acts.
- 15 52. The security lock arrangement of any one of claims 49 to 51 in which the lost motion link includes a connecting formation at an outer end of the second spindle via which the barrel of the key lock is connected to the second spindle.
- 20 53. The security lock arrangement of claim 52 in which the connecting formation comprises a pair of opposed, spaced slot-defining members at an outer end of the second spindle, the slot-defining members having shaped surfaces so that, when the second spindle is rotated under the effect of the handle, the slot-defining members can rotate relative to a component of the key lock without impinging on the component but, when the key lock is used to unlock the security lock arrangement, the component bears against the slot-defining members to cause rotation of the second spindle only.
- 25 54. A component for a security lock arrangement, the component comprising a link for interconnecting a handle and a key lock of the security lock arrangement, the link including a lost motion component to allow the barrel and the handle to operate, at least partially, independently of each other.